REMARKS

Applicant thanks the Examiner for the courtesies extended in the telephone interview conducted between the Examiner and the undersigned on March 19, 2010.

Claims 1-25 are pending in this application. By the present Amendment, claims 1 and 11 have been amended to clarify the claimed subject matter, claims 2, 3, 12 and 13 have been canceled, without prejudice or disclaimer, claim 14 has been amended to depend from claim 11, and claim 4 has been amended to depend from claim 1. Claims 1, 4-11 and 14-25 remain pending upon entry of this Amendment, with claims 1 and 11 being in independent form.

Claims 1-4, 6, 9-14, 16, 19, 20, 24 and 25 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Sabol et al. (US 2004/0101086 A1) in view of Kim et al. (US 6,278,761), and further in view of Kvist et al. (1988, "Total and visceral adipose-tissue volumes derived from measurements with computed tomography in adult men and women: predictive equations"). Claims 5 and 15 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Sabol in view of Kim and Kvist and further in view of Grauer et al. (1984, "Quantification of Body fat Distribution in the Abdomen using Computer Tomography"). Claims 7, 8, 17 and 18 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Sabol in view of Kim and Kvist and further in view of Wollenweber (US 7,155,047). Claims 21 and 22 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Sabol in view of Kim and Kvist and further in view of Rosania et al. (US 2003/0059093 A1). Claims 23 was rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Sabol in view of Kim, Kvist and Wollenweber and further in view of Griffin et al. (US 2004/0207625 A1).

Applicant respectfully submits that the present application is allowable over the cited art, for at least the reason that the cited art does not disclose or suggest the aspects of the present

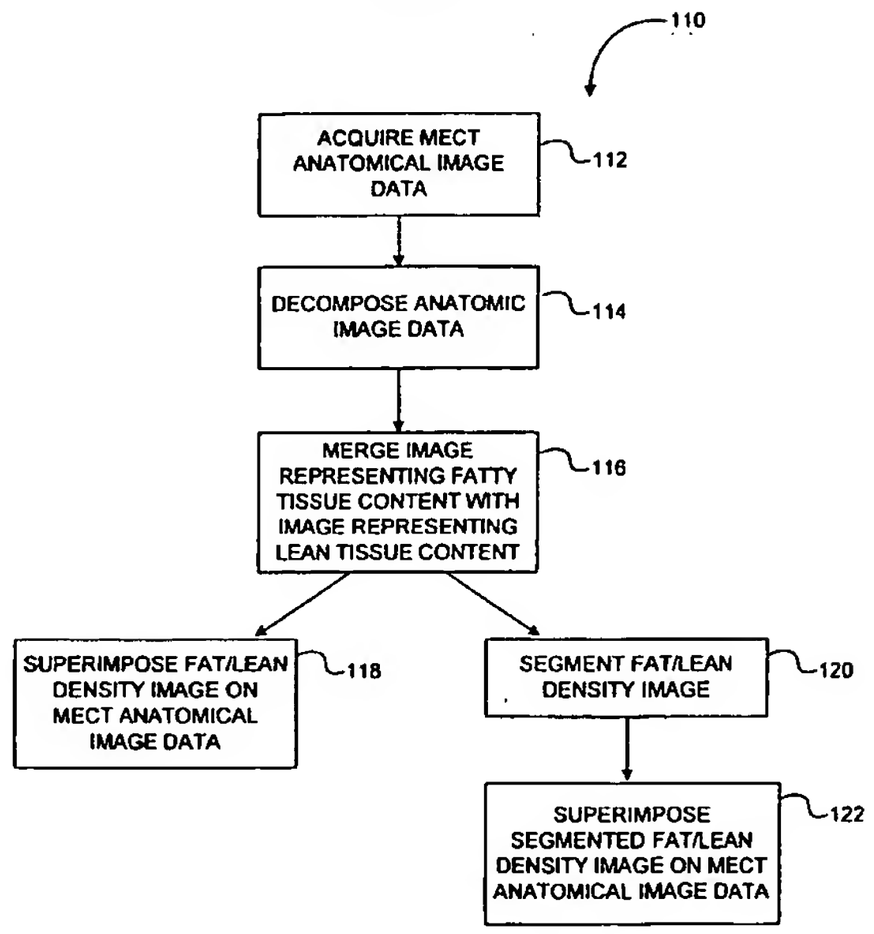
application of automatically (a) ***searching a tomographic image for a predetermined range of CT values corresponding to an abdominal wall muscle layer*** to determine from a histogram of the CT values in the predetermined range a most frequently occurring CT value in the predetermined range, (b) setting a threshold by utilizing the most frequently occurring CT value in the predetermined range, (c) ***utilizing the threshold to extract an abdominal wall muscle layer region as a non-adipose region from the body region*** and (d) ***setting, by a medical image diagnosing support apparatus, a line surrounding the abdominal wall muscle layer region***.

Sabol, as understood by applicant, proposes a multi-energy computed tomography (MECT) system configured to quantify tissue fat content, wherein, in some instances, MECT image data generated by the MECT system is segmented to determine a region (such as an organ) of interest. The region of interest may include, amongst other things, lean tissue.

Sabol, [0047] (reproduced below along with Fig. 7 of Sabol), states as follows regarding segmentation of the region of interest:

> [0047] FIG. 7 is a schematic illustration of a method 110 for quantifying fat content in tissue 74 (shown in FIG. 5) using MECT system 10 (shown in FIGS. 1 and 2). Method 110 utilizes segmentation of an image field to determine a region-of-interest for tissue characterization. Decomposed images are segmented using the above described CT image segmentation techniques. In one embodiment, segmentation of a region of interest is performed manually. ***Manual segmentation of a region of interest*** includes displaying image data to a user, wherein the user delineates the region using a mouse or any other suitable interface, such as, for example, a touch screen, eye-tracking, and/or voice commands. In an alternative embodiment, segmentation of a region of interest is performed automatically. ***Automated segmentation of a region of interest includes using an algorithm that automatically delineates an area of interest using prior knowledge, such as the shape and size of a mass***. In yet another embodiment, segmentation of a region of interest is performed using a combination of manual and automatic segmentation.

FIGURE 7



Thus, Sabol proposes that segmentation of a region of interest can be performed manually and/or automatically *based on prior knowledge of the shape or size of the area of interest.* As pointed out in Sabol, [0046]-[0047], segmentation is performed in Sabol to limit the tissue characterization (quantifying fat content) to a region of interest. More specifically, in such processing, the image data of the region of interest is decomposed to obtain (i) a density image representing a content of fatty tissue within said region of interest and (ii) a density image representing a content of lean tissue within the region of interest.

However, Sabol says nothing whatsoever regarding automatically (a) ***searching a tomographic image for a predetermined range of CT values corresponding to an abdominal wall muscle layer*** to determine from a histogram of the CT values in the predetermined range a most frequently occurring CT value in the predetermined range, (b) setting a threshold by utilizing the most frequently occurring CT value in the predetermined range, (c) ***utilizing the threshold to extract an abdominal wall muscle layer region as a non-adipose region from the body region*** and (d) ***setting, by a medical image diagnosing support apparatus, a line***

surrounding the abdominal wall muscle layer region, nor anything regarding separating, by the medical image diagnosing support apparatus, the total body adipose region into a visceral adipose region and a subcutaneous adipose region ***based on whether a specified region is located inside or outside of the line surrounding the abdominal wall muscle layer non-adipose region***.

Kim, as understood by applicant, proposes an approach for establishing a range of somatic fat by Gaussian function approximation in computerized tomography.

Kim, column 3, lines 15-31 (reproduced below), was cited in the Office Action:

> The abdominal cavity portion and the subcutaneous portion are separated in the computerized tomography image to separately measure the amounts of intra-abdominal cavity fat and subcutaneous fat (102). An ***image of high contrast is obtained*** as shown in FIG. 3 by narrowing the range of Hounsfield values from -1000 to 1000 to -200 to 100 ***to separate the abdominal cavity and the subcutaneous portion*** (11). In thus obtained image, the pixels having Hounsfield values of -200 to -40 are painted with same color as shown in FIG. 4 (12). In this way, the subcutaneous fat portion is combined into one lump (13). ***The subcutaneous fat portion is separated into a portion composed of same values so as to separate the abdominal cavity and the subcutaneous portion*** as shown in FIG. 5. The intra-abdominal cavity and the subcutaneous portion are completely separated by performing the dichotomy on the image obtained as described above as shown in FIG. 6 (14). If the intra-abdominal cavity portion is restored from the separated image by using the original image, the image of the intra-abdominal cavity alone is obtained as shown in FIG. 7 (15). The image of subcutaneous portion can be obtained if the image of interior alone obtained in FIG. 7 is subtracted from the original image (16).

Thus, in the approach proposed in Kim, the abdominal cavity and the subcutaneous fat portion are separated by using a contrast of computed tomography values, and as discussed in the telephone interview, Kim does NOT disclose or suggest using a line set automatically to surround the abdominal wall muscle layer non-adipose region.

Moreover, Kim, like Sabol, does not disclose or suggest automatically (a) ***searching a tomographic image for a predetermined range of CT values corresponding to an abdominal***

wall muscle layer to determine from a histogram of the CT values in the predetermined range a most frequently occurring CT value in the predetermined range, (b) setting a threshold by utilizing the most frequently occurring CT value in the predetermined range, (c) ***utilizing the threshold to extract an abdominal wall muscle layer region as a non-adipose region from the body region*** and (d) ***setting, by a medical image diagnosing support apparatus, a line surrounding the abdominal wall muscle layer region***.

Kvist, as understood by applicant, reports a study of techniques for quantitative determination of total and visceral adipose-tissue (AT) volume. In the experiments reported in Kvist, the visceral adipose-tissue area was specified by the operator by using a light pen to encircle the abdominal and thoracic cavities of the trunk.

Thus, Kvist merely reinforces that which Sabol proposed, that is, a region of interest can be delineated manually by user operation of a pointing device such as a mouse or light pen.

However, Kvist, like the other cited references (including Sabol, Kim, Grauer, Wollenweber, Rosania and Griffin), does NOT disclose or suggest automatically (a) ***searching a tomographic image for a predetermined range of CT values corresponding to an abdominal wall muscle layer*** to determine from a histogram of the CT values in the predetermined range a most frequently occurring CT value in the predetermined range, (b) setting a threshold by utilizing the most frequently occurring CT value in the predetermined range, (c) ***utilizing the threshold to extract an abdominal wall muscle layer region as a non-adipose region from the body region*** and (d) ***setting, by a medical image diagnosing support apparatus, a line surrounding the abdominal wall muscle layer region***.

Applicant submits that the cited art, even when considered along with common sense and common knowledge to one skilled in the art, does ***NOT*** render unpatentable the aforementioned

aspects of the present application.

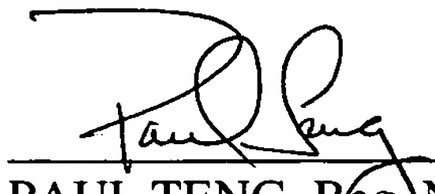
Accordingly, applicant respectfully submits that independent claims 1 and 11, and the claims depending therefrom, are allowable over the cited art.

In view of the remarks hereinabove, applicant submits that the application is allowable. Accordingly, applicant earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such petition. The Patent Office is hereby authorized to charge any required fees, and to credit any overpayment, to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



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